

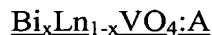
Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1 (currently amended) A light emitting GaN based device, comprising:
a semiconductor device that emits light having a wavelength in the range of 200 nm to 620 nm; and

a red phosphor ~~comprising a vanadate combined with yttrium, gadolinium and/or lanthanum and activated with trivalent~~ having the formula:



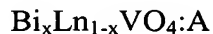
where x is greater than 0 and less than 1, Ln is an element selected from the group consisting of Y, La and Gd, and A is an activator selected from Eu^{3+} , Sm^{3+} and Pr^{3+} , or any combination thereof, with or without Tb^{3+} as a co-dopant.

2 (original) The device of claim 1 in which the red phosphor absorbs light of a wavelength in the range of 240 nm to 550 nm and emits red light at a wavelength in the range of 580 nm to 700 nm.

3 (original) The device of claim 1 containing at least one non- red phosphor in addition to said red phosphor.

4 (original) The device of claim 1 containing a green phosphor and a blue phosphor in addition to said red phosphor.

5 (currently amended) The device of claim ~~[[1]]~~ 30 in which said red phosphor has the formula:



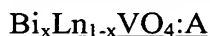
where $x = 0$ to 1, Ln is an element selected from the group consisting of Y, La and Gd, and A is an activator selected from Eu^{3+} , Sm^{3+} and Pr^{3+} , or any combination thereof, ~~with or without Tb^{3+} as a co-dopant.~~

- 6 (original) The device of claim 5 in which x is greater than 0 and less than 1.
- 7 (original) The device of claim 6 in which x is 0.05 to 0.5.
- 8 (original) The device of claim 5 including Tb^{3+} as a co-dopant.
- 9 (currently amended) The device of claim ~~[[1]]~~ 29 in which the semiconductor device is a GaN based device.
- 10 (original) The device of claim 1 in which the semiconductor device is a vertical cavity surface emitting laser, a light emitting diode, or a laser diode.
- 11 (currently amended) The device of claim [10] 29 in which the semiconductor device is a GaN based device.
- 12 (original) The device of claim 11 in which the semiconductor device is a light emitting diode.
- 13 (currently amended) The device of claim ~~[[5]]~~ 1 containing a green phosphor and a blue phosphor in addition to said red phosphor and in which said green phosphor is ~~$\text{ZnS}:\text{Cu}^+, \text{Al}^{3+}$~~ $\text{ZnS}:(\text{Cu}^+, \text{Al}^{3+})$ and said ~~red~~ blue phosphor is $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}^{2+}$.
- 14 (original) A light emitting semiconductor device, comprising:
a GaN based light emitting diode that emits light having a wavelength in the range of 200 nm to 620 nm;
a red phosphor that absorbs light of a wavelength in the range of 240 nm to 550 nm and emits red light at a wavelength in the range of 580 nm to 700 nm, having the formula:
$$\text{Bi}_x\text{Ln}_{1-x}\text{VO}_4:\text{A}$$
where x is 0.05 to 0.5, Ln is an element selected from the group consisting of Y, La and Gd, and A is an activator selected from Eu^{3+} , Sm^{3+} and Pr^{3+} , or any combination thereof, with or without Tb^{3+} as a co-dopant;
a green phosphor; and
a blue phosphor.

15 (original) The device of claim 14 including Tb^{3+} as a co-dopant.

16 (currently amended) The device of claim 14 in which said green phosphor is $\text{ZnS}:\text{Cu}^+, \text{Al}^{3+}$ $\text{ZnS}:(\text{Cu}^+, \text{Al}^{3+})$ and said blue phosphor is $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}^{2+}$.

17 (currently amended) A white light emitting phosphor combination, comprising:
a red phosphor ~~comprising a vanadate combined with yttrium, gadolinium and/or lanthanum and activated with trivalent~~ having the formula:



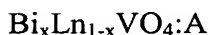
where x is greater than 0 and less than 1, Ln is an element selected from the group consisting of Y, La and Gd, and A is an activator selected from Eu^{3+} , Sm^{3+} and or Pr^{3+} , or any combination thereof, with or without Tb^{3+} as a co-dopant;

a green phosphor; and

a blue phosphor.

18 (original) The phosphor combination of claim 17 in which said red phosphor absorbs light of a wavelength in the range of 240 nm to 550 nm and emits red light at a wavelength in the range of 580 nm to 700 nm.

19 (currently amended) The phosphor combination of claim ~~[[17]]~~ 31 in which said red phosphor has the formula:



where $x = 0$ to 1, Ln is an element selected from the group consisting of Y, La and Gd, and A is an activator selected from Eu^{3+} , Sm^{3+} and Pr^{3+} , or any combination thereof, with or without Tb^{3+} as a co-dopant.

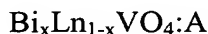
20 (original) The phosphor combination of claim 19 in which x is greater than 0 and less than 1.

21 (original) The phosphor combination of claim 20 in which x is 0.05 to 0.5.

22 (original) The phosphor combination of claim 19 in which said red phosphor includes Tb^{3+} as a co-dopant.

23 (currently amended) The phosphor combination of claim [[19]] 17 in which said green phosphor is $\text{ZnS}:\text{Cu}^+, \text{Al}^{3+}$ $\text{ZnS}:(\text{Cu}^+, \text{Al}^{3+})$ and said blue phosphor is $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}^{2+}$ suitable for use in a GaN based device..

24 (currently amended) A white light emitting phosphor combination,
a red phosphor that absorbs said light of a wavelength in the range of 240 nm to 550 nm and emits red light at a wavelength in the range of 580 nm to 700 nm, having the formula:



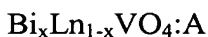
where x is 0.05 to 0.5, Ln is an element selected from the group consisting of Y, La and Gd, and A is an activator selected from Eu^{3+} , Sm^{3+} and Pr^{3+} , or any combination thereof, with or without Tb^{3+} as a co-dopant.;

a green phosphor comprising $\text{ZnS}:\text{Cu}^+, \text{Al}^{3+}$ $\text{ZnS}:(\text{Cu}^+, \text{Al}^{3+})$; and

a blue phosphor comprising $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}^{2+}$.

25 (original) The phosphor combination of claim 24 in which said red phosphor includes Tb^{3+} as a co-dopant.

26 (currently amended) A red phosphor that absorbs said light of a wavelength in the range of 240 nm to 550 nm and emits red light at a wavelength in the range of 580 nm to 700 nm, having the formula:



where x is ~~greater than 0 and less than 1~~ 0.05 to 0.5, Ln is an element selected from the group consisting of Y, La and Gd, and A is an activator selected from Eu^{3+} , Sm^{3+} and Pr^{3+} , or any combination thereof, with or without Tb^{3+} as a co-dopant.

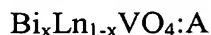
27 (currently amended) The phosphor [[26]] 32 in which x is 0.05 to 0.5.

28 (original) The phosphor 26 in which in which said red phosphor includes Tb^{3+} as a co-dopant.

29 (new) A light emitting device, comprising:

a semiconductor device that emits light having a wavelength in the range of 200 nm to 620 nm; and

a red phosphor having the formula:



where x is 0.05 to 0.5, Ln is an element selected from the group consisting of Y, La and Gd, and A is an activator selected from Eu^{3+} , Sm^{3+} and Pr^{3+} , or any combination thereof, with or without Tb^{3+} as a co-dopant.

30 (new) A light emitting device, comprising:

a semiconductor device that emits light having a wavelength in the range of 200 nm to 620 nm; and

a red phosphor comprising a vanadate combined with yttrium, gadolinium and/or lanthanum and activated with trivalent Eu^{3+} , Sm^{3+} or Pr^{3+} , or any combination thereof, with Tb^{3+} as a co-dopant.

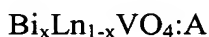
31 (new) A white light emitting phosphor combination, comprising:

a red phosphor comprising a vanadate combined with yttrium, gadolinium and/or lanthanum and activated with trivalent Eu^{3+} , Sm^{3+} and Pr^{3+} , or any combination thereof, with Tb^{3+} as a co-dopant;

a green phosphor; and

a blue phosphor.

32 (new) A red phosphor that absorbs said light of a wavelength in the range of 240 nm to 550 nm and emits red light at a wavelength in the range of 580 nm to 700 nm, having the formula:



where x is greater than 0 and less than 1, Ln is an element selected from the group consisting of Y, La and Gd, and A is an activator selected from Eu^{3+} , Sm^{3+} and Pr^{3+} , or any combination thereof, with Tb^{3+} as a co-dopant.